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TOPIC(s) : Alternative solvents

Des solutio

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PURPOSE OF THE ABSTRACT

Nature is the most plentiful source of compounds. Many of these compounds (vitamins, phenols, flavonoids, antioxidants) have been used in different fields of applications for long time, namely for nutritional, cosmetic or pharmaceutical proposes, where the main extraction process was based on the use organic solvents. The problem is that these solvents have a harmful effect on safety, health and environment, due to its toxicity. Regulation is getting tighter and companies look for "greener" alternatives, while consumers demand for organic products.

Des Solutio aims to explore natural solvents bio-inspired by nature, the natural Deep Eutectic Solvents (DES). Natural DES are mixtures of two or more naturally occurring chemical components, which when combined at a particular molar ratio become liquid at room temperature. The research team ahead the Company is one of the pioneers in this new discovering way to recover active molecules extracts, with demonstrated feasibility of the technology with two raw materials, namely with yerba mate and green coffee beans in TRL6, whose work attracted the interest of large corporates such as L'Oréal, Beiersdorf, Lonza Group Group, Hayashibara, G's Fresh, Devro among others.

The technology approach of Des Solutio considers that most active molecules that are synthesized in plants are in the core of the plant cell, but some of the metabolites are not always fully soluble, and by using natural solvents like sugar, amino acids or organic acids on the right proportion - the so-called natural deep eutectic solvent - is possible to recreate plants intracellular environment to extract active compounds with improved extraction and processing time, higher yield of production, less purification steps and without using toxic solvents.

Cosmetic companies like L'Oréal and Beiersdorf wish to answer customers' demands for organic cosmetics that can be placed on a premium personal care products, whose market value is estimated to reach \$15.98 billion by 2020 (2016, Allied Market Research), while manufacturers of active ingredients for cosmetics, personal care and food industry like Lonza Group is already looking for natural alternatives based on DES. On the other hand, agriculture producers have large quantities of by-products, that can be a source of high added value compounds.

Des Solutio is currently discussing a collaboration with G's Fresh to use their vegetable by-product material as the natural sources of compounds.

Des Solutio is a spin-off company from Faculty of Sciences and Technology at Nova University of Lisbon, owned by the academics Prof. Ana Rita Duarte and Dr. Alexandre Paiva together with Frontier IP Group Plc, that is a specialized company in commercialisation of intellectual property from universities and research centers. Des Solutio has started trading through the provisions of consulting agreement with major cosmetic companies. Whilst we expect this revenue stream to grow, the company envisages the need to raise funds through a combination of public grant funding and equity raising.

We aim to identify the compounds to be extracted in a range of natural sources using a set of DES libraries made of know-how from Des Solutio. By assessing the commercial value of different extracts, assessing which have the highest probability of success, both commercially and also in terms of technical point-of-view, we would be able to understand the viability of each potential solution. In that sense, the company requires additional funding for the technical and economic feasibility studies near large market players.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

BIBLIOGRAPHY